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STRUCTURE OF LAMINATED CORE OF MOTOR

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ABSTRACT:

CHG DATE=19990617 STATUS=0>An object of the invention is to provide easily

and economically a stator core (10, 10') or a rotor core (32) of a motor. The

invention provides a structure of a laminated core formed by pushing a spring

pin (22) having tapered longitudinal ends (24) into holes (14a, 14b, 14c, 14d,

14a', 14b', 14c', 14d', 36) formed on each element sheet

(12, 12', 34) forming the stator core or the rotor core. When pushed in, the spring pin (22) aligns irregular element sheets due to its righting moment in its radial direction and fastens them together.

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Abstract Text - FPAR (1):

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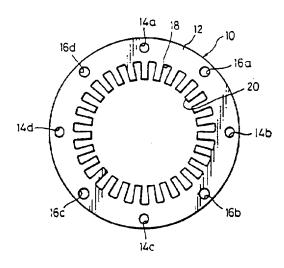
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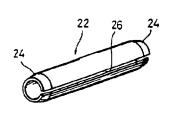
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(54) 発明の名称 電動機における積層コアの構造





(57) Abstract

An object of the invention is to provide easily and economically a stator core (10, 10') or a rotor core (32) of a motor. The invention provides a structure of a laminated core formed by pushing a spring pin (22) having tapered longitudinal ends (24) into holes (14a, 14b, 14c, 14d, 14a', 14b', 14d', 14d', 36) formed on each element sheet (12, 12', 34) forming the stator core or the rotor core. When pushed in, the spring pin (22) aligns irregular element sheets due to its righting moment in its radial direction and fastens them together.

(57) 要約

電動機におけるステータコア(10・10′)、又はロータコア(32)を容易に、しかも廉価に提供することを目的とし、半径方向に弾性力を有し、長手方向の端部を先細状のテーパ(24)に形成したスプリングピン(22)を、前記ステータコアやロータコアを形成する各要素板(12・12′・34)に設けた孔(14a・14b・14c・14d・14a′・14b′・14c′・14d′・36)に圧入することにより構成した、電動機における積層コアの構造を提供するものである。スプリングピン2は、圧入されたとき、その半径方向の復元力によって不揃いの各要素板を整列させると共に、互いに締結させることができる。

情報としての用途のみ

PCTに基づいて公当される関係出議のパンフレット第1頁にPCT加盟国を同定するために使用されるコード

AT オースト AT オールスト BB オールルドラス BE パルルギーリ BJ ブウス・ファー CG ファーカラン CG コスイメトンシン DE デフィア DE デフィア

GA カボギリハ CB イギリス HU インスリー IT イ日 がリー JP 砂球 民主 主義人 早 共和国 KR 大リニュンカ LU ルリランカ ル MC マリー ML マリー

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明 細 書

電動機における積層コアの構造

技術分野

本発明は電動機における積層コアの構造であって、積層コアを構成する要素板の整列締結構造に関する。

背景技術

従来、各要素板を積層して、電動機の積層コアを組み立てる場合には、積層コアを構成する各要素板のスロット等を整列させるため、円筒形の基板に一又は二個のフィン状部材を取り付けた組立用治具を使用していた。またある場合には各要素板にダボを作って、このダボを基準として組み立てていた。

然しながら、上記の治具を用いる方法では組立に工数を要し、またダボを作る金型は非常に高価である。

発明の開示

依って本発明の目的は斯る問題点の解決を図るべく、コア の積層組立工程を簡略化すると共に、廉価な積層コアを提供 しようとするものである。

本発明は上記目的に鑑みて、複数の要素板を整列集積して 構成する電動機における積層コアの構造であって、前記各要 素板の所定箇所には一又は二以上の孔が設けてあり、該各要 素板の夫々対応した前記孔にその半径寸法が弾力的に変化す るスプリングピンを圧入し、前記各要素板を整列させたこと を特徴とする電動機における積層コアの構造を提供する。

上記の各孔にスプリングピンを圧入させることにより、仮に積層された各要素板の不揃いが修正されると共に、スプリングピンがその弾力により前記各孔の中で一満に広がり、各要素板を強固に締結することができる。

図面の簡単な説明

- 第1図はステータコアの正面図、
- 第2図はスプリングピンの斜視図、
- 第3図はステータコアが電動機の内周側にある場合の正面 図、

第4図はマグネットがロータコアによって狭持されたタイプの同期電動機ロータの断面図である。

発明を実施するための最良の態様

以下本発明を添付図面に示す実施例に基づいて更に詳細に 説明する。第1図はステータの積層コアの正面図である。以 下の説明は主としてステータの積層コアについて述べている が、ロータの積層コアであっても同様である。また被駆動体 を直接方式によって駆動するダイレクトドライブ方式の電動 機であっても、伝動機構を介して駆動する電動機であっても 適用可能である。更にはリニア形式の電動機にも適用可能で ある。

積層のステータコア10を構成する複数個の要素板12に

は、夫々スロットを構成するスロット要素孔18が設けられている。また本ステータコア10は電動機に組み込まれた場合には、小さな間隙を介してロータ(図示せず)と相対する。この間隙は全周に亘って一様であることが望まれ、しかもかなり小さな値に設定される。従って各要素板12の内周縁20の位置を各要素板12に対して揃え、しかもスロット要素孔18の円周方向位置も揃えることが必要である。

このため各要素板12の外周縁近くの所定位置(本実施例では同一円周上に90度ずつ離隔させた4箇所)にスプリングピン22(第2図)を圧入するための孔14a・14b・14c、14dを設けている。この孔は各要素板12を正しく位置決め、固定するために、3箇所以上(本実施例では4箇所)が望ましい。

スプリングピン22は、第2図に図示されている様に、細長い円筒状の部材であって、その長手方向に亘ってスリット26が設けられており、このスリットの幅寸法だけその半径方向に弾力を有している。このスプリングピン22は鉄製か又はステンレス鋼製のものが用いられる。またその長手方向の端部のうち、少なくとも一端(本実施例では両端)を先細状のテーパ24に形成している。各要素板12を仮に揃えて積層して成る積層のステータコア10には、恐らくは不揃いではあるが、各孔14a・14b・14c・14dに対応した孔が長手方向に連なった連通孔が形成されているが、上記スプリングピン22を圧入するに際して、そのテーパ部24を挿入の先側とすれば、その挿入作業が容易となる。本実施例の様に、

スプリングピン22がテーパ部24を両端に有しておれば、 作業者がスプリングピン22の方向を気にすることなく、要 素板12の組立作業を迅速に行うことができる。

こうして圧入されたスプリングピン22は、その半径方向の復元力によって各要素板12の不揃いを矯正すると共に、該各要素板12を互いに締結させて、積層のステータコア10を形成することができる。第1図の残りの孔16a、16b、16c、16dは本ステータコア10を電動機のハウジング(図示せず)にボルトを介して固定するための孔であり、本発明と直接の関連はない。

第3図は、例えばダイレクトドライブ電動機等においてよく見られ、電動機の内周側にステータが設けられた場合のステータコア10′の正面図である。第1図の各部の名称と対応する部分には、ダッシュ記号を除けば同一の参照番号で示している。また第4図はマグネット30をコア32で狭持したタイプの同期電動機ロータの横断面を図示している。周知の如く、このロータコア32も要素板34を複数個長手方向に積層して構成するが、本実施例では、この各要素板34に夫々同一位置に孔36を設けており、これらの孔36に第2図に示すスプリングピン22を圧入することにより、各ロータコア32を形成している。

以上の説明から明らかな様に本発明によれば、コアの積層 組立工程が簡単になると共に、延いては、廉価な積層コアが 提供可能となる。

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請求の範囲

- 1. 複数の要素板を整列集積して構成する電動機における 積層コアの構造であって、前記各要素板の所定箇所には一又 は二以上の孔が設けてあり、該各要素板の夫々対応した前記 孔にその半径寸法が弾力的に変化するスプリングピンを圧入 し、前記各要素板を整列させたことを特徴とする電動機にお ける積層コアの構造。
- 2. 前記積層コアがステータコアから成る請求の範囲第1項記載の電動機における積層コアの構造。
- 3. 前記積層コアがロータコアから成る請求の範囲第1項記載の電動機における積層コアの構造。
- 4. 前記各要素板には前記孔を三箇所以上設けて成る請求の範囲第2項記載の電動機における積層コアの構造。
- 5. 前記スプリングピンの長手方向における少なくとも一端が先細状に形成されて成る請求の範囲第1項記載の電動機における積層コアの構造。

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Fig. 1

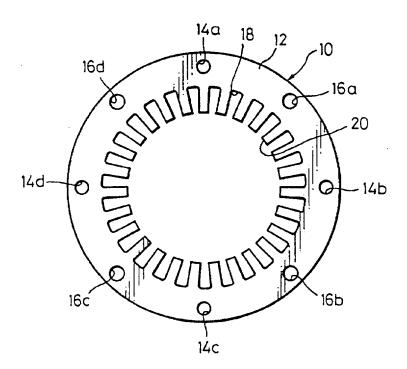
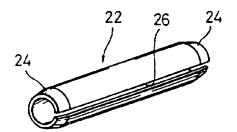
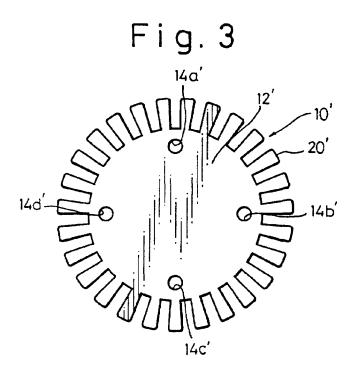
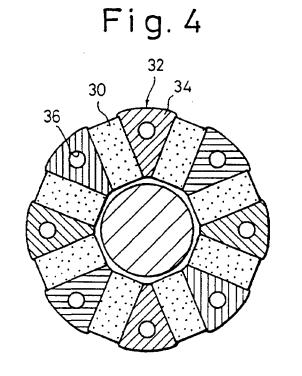


Fig. 2



 $\frac{2}{3}$





$\frac{3}{3}$

参照番号一覧表

10.10′…積層のステータコア

12,12′ …ステータコアを構成する要素板

14a,14b,14c,14d…孔

22…スプリングピン

24…テーパ部

26…スリット

32…積層のロータコア

34…ロータコアを構成する要素板

3 6 …孔

INTERNATIONAL SEARCH REPORT

International Application No

PCT/JP88/01083

According to International Patest Classification (PC or to both National Case) (Easting and IPC Int. Cl4 H02K1/06, 1/18, 1/30, 15/10 II. FILLDS SEARCHED				CT/JP88/01083	
Int. C1 ⁴ HO2KI/O6, 1/18, 1/30, 15/10 Minimum Documentation Searched ¹ Classification System Classification Symbols IPC HO2KI/O6, 1/18, 1/30, 15/10 Documentation Searched other than Minimum Documentation to the Edent that such Documents are Included in the Fields Searched ¹ Jitsuyo Shinan Koho 1926 – 1988 White Documents Considered To Be Relevant ¹ Category ¹ Citation of Document, ¹¹ with indication, where appropriate, of the relevant passages ¹² Relevant to Claim No. ¹² Y JP, A, 53–149608 (Mitsubishi Electric Corporation) 27 December 1978 (27, 12, 78) Columns 4 to 5 (Family: none) Y JP, U, 52–85102 (JECO Co., Ltd.) 24 June 1977 (24, 06, 77) Column 2 (Family: none) Y JP, Y2, 44–19221 (Kokusan Denki Co., Ltd.) 1–2, 5 24 June 1977 (24, 06, 77) Column 2 (Family: none) Y JP, Y2, 44–19221 (Kokusan Denki Co., Ltd.) 1–2, 5 18 August 1969 (18, 08, 69) Columns 1 to 2 (Family: none) White is active seatables by published on or after the international filing date of the considered to involve an invention science of active seatables and sciences of active deep related to produce the considered to inventor and comments are included in the principle or theory underlying the invention of other means of another white the considered in other work occurrent other means of another white the considered in other work occurrent other means of another white the considered in other work occurrent other means of a considered with one or more other work occurrent other means of the mea					
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